APRIL/MAY 2024

23PCH22 — PHYSICAL CHEMISTRY — I

Time : Three hours Maximum : 75 marks

Shanmuga Industries Arts & Science College T.V.Malai

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Define Fugacity.
2. Mention thermodynamics of real gases.
3. What is Fermi Dirac?
4. Write a short notes on canonical particles.
5. Define entropy.
6. What is para hydrogen?
7. Outline the Flux concepts.
8. Tell about electro kinetics.
9. Write the primary salt effect.
10. Give the note on cationic polymerization.

SECTION B - - (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) Explain the determination of partial molar quantities.

Or

(b) Discuss Gibb's-Duhem equation-binary and ternary systems.

12. (a) Describe Bose-Einstein Statistics.

Or

(b) Write a note on Maxwell – Boltzmann.

13. (a) Summarize the heat capacity of mono and di atomic gases.

Or

(b) Describe Helmholtz function residual entropy.

14. (a) Interpret the electro kinetic and thermo mechanical effects.

Or

(b) Discuss Onsager theory.

15. (a) Explain the Rice Herzfeld mechanism.

Or

(b) Write the applications of ARRT to reactions between atoms and molecules.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Discuss Duhem – Margulus equation applications of ideal and non-ideal mixtures.

17. Illustrate the evaluation of translational, vibrational and rotational partition functions form monoatomic, diatomic and polyatomic ideal gases.

18. Estimate the heat capacity of solids-Einstein and Debye models.

19. Evaluate the application of irreversible thermodynamics to biological systems.

20. Justify the kinetics of polymerization-free radical, cationic, anionic polymerization.

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